DETAILED ACTION

Claim Objections

1. Claim **37** is objected to because of the following informalities: Claim 7 lines 2-3 recite "including at least one of e-mail for fax and said different type sof bit rates". It is suggested that "for" be changed to --- or --- and "type sof" be changed to --- types of ---. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims **1-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhl et al. (US 2003/0123449) in view of Ando et al. (US 6,985,489).

Regarding claim 1, Kuhl teaches classifying by rate, the ATM traffic inputted to an egress through at least one channel (see paragraph 66 lines 13-16 and Table A);

acquiring a total of channel bandwidths of ATM traffic of the inputted traffic corresponding to at least one setup rate (see paragraph 88 lines 1-6 and Table D; The reserved bandwidths are totaled and are guaranteed the bandwidth with the corresponding real-time traffic rate in a line rate packet stream.); and

forwarding the ATM traffic corresponding to the setup rate through a single channel having the acquired bandwidth (see paragraph 88 lines 1-6).

Kuhl teaches all the subject matter of the claimed invention with the exception of classifying and forwarding ATM and MPLS traffic to an ATM processing unit, wherein the ATM traffic and MPLS traffic are classified and forwarded concurrently and the ATM traffic is classified and forwarded without conversion to MPLS packets.

However, Ando teaches an ATM and MPLS network coexisting without the conversion of ATM to MPLS or MPLS to ATM (see col. 8 line 65 – col. 9 line 7). The ATM traffic and MPLS traffic are classified concurrently by rate and forwarded without conversion (see col. 4 lines 49-63 and Fig. 2). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 2, Kuhl further teaches comprising forwarding MPLS traffic of the inputted traffic by subscriber channel according to a priority of the classified rate (see Table A and paragraph 70 lines 1-5).

Regarding claim 3, Kuhl further teaches performing processing on a second layer of the forwarded traffic (see paragraph 56 lines 1-12); and matching the processed

traffic to a physical layer (see paragraph 56 lines 1-12; The gateways perform processing on a second layer and transmit the processed data on a physical layer.).

Regarding claim 4, Kuhl further teaches the rate includes CBR, RT-VBR, NRT-VBR and UBR, in hierarchical order (see Table B).

Regarding claim 5, Kuhl further teaches the setup rate includes CBR, RT-VBR, and NRT-VBR rates (see Table C).

Regarding claim 6, Kuhl further teaches the ATM traffic corresponding to the setup rate is real-time traffic (see paragraph 52 lines 1-4).

Regarding claim 7, Kuhl teaches classifying ATM traffic of traffic inputted to an egress through at least one channel, into non-unspecified bit rate (UBR) traffic and UBR traffic (see Table A);

finding a total of channel bandwidths assigned to the classified non-UBR traffic (see paragraph 88 lines 1-6); and

forwarding the classified non-UBR traffic through a single channel having a bandwidth amounting to the found total (see paragraph 88 lines 1-6).

Kuhl teaches all the subject matter of the claimed invention with the exception of classifying and forwarding ATM and MPLS traffic to an ATM processing unit, wherein the ATM traffic and MPLS traffic are classified and forwarded concurrently and the ATM traffic is classified and forwarded without conversion to MPLS packets.

However, Ando teaches an ATM and MPLS network coexisting without the conversion of ATM to MPLS or MPLS to ATM (see col. 8 line 65 – col. 9 line 7). The ATM traffic and MPLS traffic are classified concurrently by rate and forwarded without

conversion (see col. 4 lines 49-63 and Fig. 2). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 8, Kuhl further teaches classifying MPLS traffic of the inputted traffic by rate (see Table C); and

forwarding the MPLS traffic by channel according to a priority of the classified rate (see Table B and paragraph 78 lines 8-12).

Regarding claim 9, Kuhl further teaches performing processing on a second layer of the forwarded traffic (see paragraph 56 lines 1-12); and matching the processed traffic to a physical layer (see paragraph 56 lines 1-12; The gateways perform processing on a second layer and transmit the processed data on a physical layer.).

Regarding claim 10, Kuhl further teaches the rate includes CBR, RT-VBR, NRT-VBR and UBR, in hierarchical order (see Table B).

Regarding claim 11, Kuhl further teaches ATM traffic of the non-UBR rate is forwarded with a same priority as the MPLS traffic of the CBR rate (see Table C).

Regarding claim 12, Kuhl further teaches the ATM traffic of the non-UBR rate and the MPLS traffic of the CBR rate are forwarded by a round robin method when simultaneously inputted (see paragraph 81 lines 1-5).

Regarding claim 13, Kuhl teaches a traffic rate classifying unit classifying traffic inputted to an egress by rate, where ATM traffic of the inputted traffic is classified into a non-unspecified bit rate (UBR) traffic rate and a UBR traffic rate (see Table A), and

where MPLS traffic of the inputted traffic are classified into constant bit rate (CBR), real-time variable bit rate (RT-VBR), non-real-time variable bit rate (NRT-VBR), and unspecified bit rate (UBR), in hierarchical order (see Table B);

a traffic storing unit comprising an ATM traffic storing unit having a first buffer buffering the ATM traffic corresponding to the non-UBR rate and a second buffer buffering the ATM traffic corresponding to the UBR rate (see Fig. 6 Box 602) and a MPLS traffic storing unit having a plurality of buffers buffering the MPLS traffic by classified rate and by channel (see Table C); and

a scheduler forwarding traffic stored in the traffic storing unit according to a priority of each of the classified rates (see paragraph 77 lines 1-3).

Kuhl teaches all the subject matter of the claimed invention with the exception of classifying and forwarding ATM and MPLS traffic to an ATM processing unit, wherein the ATM traffic and MPLS traffic are classified and forwarded concurrently and the ATM traffic is classified and forwarded without conversion to MPLS packets.

However, Ando teaches an ATM and MPLS network coexisting without the conversion of ATM to MPLS or MPLS to ATM (see col. 8 line 65 – col. 9 line 7). The ATM traffic and MPLS traffic are classified concurrently by rate and forwarded without conversion (see col. 4 lines 49-63 and Fig. 2). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 14, Kuhl further teaches the non-UBR traffic rate includes CBR, RT-VBR, and NRT-VBR (see Table B).

Regarding claim 15, Kuhl further teaches the scheduler forwards the ATM traffic of the non-UBR rate stored in the first buffer unit with the same priority of the MPLS traffic of the CBR rate (see Table C).

Regarding claim 16, Kuhl further teaches the scheduler finds a total of channel bandwidths of the ATM traffic corresponding to the non-UBR rate and forwards the ATM traffic stored in the first buffer unit through a single channel having a bandwidth amounting to the found total (see paragraph 88 lines 1-6).

Regarding claim 17, Kuhl further teaches an ATM processing unit performing processing on a second layer of the forwarded traffic; and a physical layer matching unit matching the processed traffic to a physical layer (see paragraph 56 lines 1-12; The gateways perform processing on a second layer and transmit the processed data on a physical layer.).

Regarding claim 18, Kuhl teaches classifying inputted traffic by a classification rate (see Table A);

acquiring a total channel bandwidth of asynchronous transfer mode traffic corresponding to at least one setup rate (see paragraph 88 lines 1-6 and Table D; The reserved bandwidths are totaled and are guaranteed the bandwidth with the corresponding real-time traffic rate in a line rate packet stream.); and

forwarding the asynchronous transfer mode traffic corresponding to the setup rate (see paragraph 79 lines 6-9);

where the forwarding the asynchronous traffic mode traffic occurs through a single having the acquired bandwidth (see paragraph 88 lines 1-6).

Kuhl teaches all the subject matter of the claimed invention with the exception of classifying and forwarding ATM and MPLS traffic to an ATM processing unit, wherein the ATM traffic and MPLS traffic are classified and forwarded concurrently and the ATM traffic is classified and forwarded without conversion to MPLS packets.

However, Ando teaches an ATM and MPLS network coexisting without the conversion of ATM to MPLS or MPLS to ATM (see col. 8 line 65 – col. 9 line 7). The ATM traffic and MPLS traffic are classified concurrently by rate and forwarded without conversion (see col. 4 lines 49-63 and Fig. 2). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 19, Kuhl further teaches forwarding multi-protocol label switching traffic by subscriber channel (see paragraph 77 lines 1-6);

performing processing on a second layer of the forwarded traffic (see paragraph 56 lines 1-12; The gateways perform processing on a second layer.).; and

matching the processed traffic to a physical layer (see paragraph 56 lines 1-12; The gateways and transmit the processed data on a physical layer.);

where the forwarding multi-protocol label switching occurs according to a priority of the classification rate (see Table B).

Regarding claims 20 and 21, Kuhl further teaches the classification rate includes CBR, RT-VBR, NRT-VBR and UBR, in hierarchical order (see Table B).

Regarding claim 22, Kuhl further teaches the setup rate includes CBR, RT-VBR, and NRT-VBR rates (see Table C).

Regarding claim 23, Kuhl further teaches the ATM traffic corresponding to the setup rate is real-time traffic (see paragraph 52 lines 1-4).

Regarding claim 24, Kuhl teaches a traffic rate classifying unit (see paragraph 69 lines 1-8);

a traffic storing unit (see Fig. 6 Box 602); and

a scheduler (see Fig. 6 Box 605);

where the traffic rate classifying unit classifies asynchronous transfer mode traffic by unspecified bit rate and non-unspecified bit rate (see paragraph 69 lines 1-8).

Kuhl teaches all the subject matter of the claimed invention with the exception of classifying and forwarding ATM and MPLS traffic to an ATM processing unit, wherein the ATM traffic and MPLS traffic are classified and forwarded concurrently and the ATM traffic is classified and forwarded without conversion to MPLS packets.

However, Ando teaches an ATM and MPLS network coexisting without the conversion of ATM to MPLS or MPLS to ATM (see col. 8 line 65 – col. 9 line 7). The ATM traffic and MPLS traffic are classified concurrently by rate and forwarded without conversion (see col. 4 lines 49-63 and Fig. 2). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by

Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 25, Kuhl further teaches an asynchronous transfer mode traffic storing unit (see Fig. 6 Box 602); and a multi-protocol switching traffic storing unit (see Fig. 8A Boxes 704, 706, 708).

Regarding claim 26, Kuhl further teaches a first buffer buffering asynchronous transfer mode traffic corresponding to the non-unspecified bit rate (see Fig. 6 Box 602b); and

a second buffer buffering asynchronous transfer mode traffic corresponding to the unspecified bit rate (see Fig. 6 Box 602a).

Regarding claim 27, Kuhl further teaches the multi-protocol label switching traffic storing unit further comprises a plurality of buffers buffering multi-protocol label switching traffic by a classification rate (see Fig. 7 Boxes 706a-h) and by channel (see Fig. 7 Boxes 703, 705, 717).

Regarding claim 28, Kuhl further teaches the traffic rate classifying unit classifies multi-protocol label switching traffic by constant bit rate, real-time variable bit rate, non-real-time variable bit rate, and unspecified bit rate (see Table C).

Regarding claim 29, Kuhl further teaches the scheduler forwards traffic stored in the traffic storing unit according to a priority of each of a classified rate (see paragraph 79 lines 6-9).

Regarding claim 30, Kuhl further teaches an asynchronous transfer mode processing unit performing processing on a second layer of forwarded traffic; and

a physical layer matching unit matching processed traffic to a physical layer(see paragraph 56 lines 1-12; The gateways perform processing on a second layer and transmit the processed data on a physical layer.)..

Regarding claim 31, Kuhl further teaches a first buffer buffering asynchronous transfer mode traffic corresponding to the non-unspecified bit rate (see Fig. 6 Box 602b); and a second buffer buffering asynchronous transfer mode traffic corresponding to the unspecified bit rate (see Fig. 6 Box 602a).

Regarding claim 32, Kuhl further teaches the scheduler forwards asynchronous mode traffic of the non-unspecified bit rate stored in the first buffer with the same priority of the multi-protocol label switching traffic of constant bit rate (see Table C), finds a total channel bandwidth of asynchronous transfer mode traffic corresponding to non-unspecified bit rate, and forwards the asynchronous transfer mode traffic stored in the first buffer through a single channel having a bandwidth equal to the total channel bandwidth (see paragraph 88 lines 1-6).

Regarding claim 33, Kuhl teaches all the subject matter of the claimed invention with the exception of the MPLS traffic is input into the egress through at least one channel different from the at least one channel through which the ATM traffic is input into the egress. However, Ando teaches the MPLS traffic is input into the egress through at least one channel different from the at least one channel through which the ATM traffic is input into the egress (see Fig. 13 "MPLS Traffic T1" and "ATM Traffic T2"). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM

and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 34, Kuhl teaches all the subject matter of the claimed invention with the exception of the ATM traffic is classified and forwarded to the ATM processing unit independently from the concurrent classification and forwarding of the MPLS traffic to the ATM processing unit. However, Ando teaches the ATM traffic is classified and forwarded to the ATM processing unit independently from the concurrent classification and forwarding of the MPLS traffic to the ATM processing unit (see col. 4 lines 49-63; The ATM traffic and MPLS traffic are classified into separate queues and forwarded based on the bandwidth assigned to the type of traffic.). Thus, it would have been obvious to one of ordinary skill in the art to process the ATM and MPLS traffic separately as taught by Ando in the system of Kuhl to process the traffic more efficiently by not having to convert data.

Regarding claim 35, Kuhl further teaches the ATM bit rate is translated to a system-wide class of service (see paragraph 75), and the MPLS bit rate is also translated to the class of service (see paragraph 73). ATM and MPLS data with the same bit rate would fall in the same COS.

Regarding claim 36, Kuhl further teaches the first type of bit rate is UBR (see paragraph 75 and Table B; All UBR data are classified into COS 8.).

5. Claims **37 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhl et al. (US 2003/0123449) in view of Ando et al. (US 6,985,489) as applied to claims 1 and 35 above, and further in view of Pulkka et al. (US 2003/0169751).

Regarding claim 37, Kuhl further teaches the first type of bit rate corresponds to a non-real time service and the different types of bit rates include a non-real-time service and a real-time service (see Table B). Kuhl in view of Ando does not explicitly disclose the non-real-time service includes at least one of email or fax. However, Pulkka teaches the non-real-time service includes at least one of email or fax (see paragraph 51). Thus, it would have been obvious to one of ordinary skill in the art to include fax in the non-real-time service to transport delay sensitive at a higher priority than fax data.

Regarding claim 38, Kuhl does not teach the ATM traffic classified as non-UBR is forwarded with a same priority as MPLS traffic classified as CBR. However, Pulkka teaches non-UBR data and CBR data being forwarded with the same priority (see paragraph 54; The real time data is forwarded as the same as CBR data). Thus, it would have been obvious to one of ordinary skill in the art to forward real-time and CBR data at the same priority as taught by Pulkka to ensure quality of service for delay sensitive real time data.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BETTY LEE whose telephone number is (571)270-1412. The examiner can normally be reached on Monday-Thursday 9-5 EST and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. L./
Examiner, Art Unit 2619

/Hassan Kizou/

Supervisory Patent Examiner, Art Unit 2619